Interseismic deformation at Three Sisters volcano, Oregon, USA: a strategy for taking volume changes through coupled hydraulic-viscous modeling

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1. OVERVIEW

The Three Sisters volcanic region Oregon (USA) is one of the most active volcanic areas in the Cascade Range and is densely populated with eruptive vents. An extensive area just west of South Sister volcano has been actively uplifted since about 1998.

2. MOTIVATION & OBJECTIVES

Objectives:
- Study inter-eruptive periods
- Understand post-intrusion state
- Investigate the likely cause of volume time series signals using viscoelastic approximation with different melt supplies through a dynamic model.

3. MODELING APPROACH

Coupling the effects of conduit magma flow into a viscoelastic magma chamber

4. DATA MODELING PROCEDURE

5. PRELIMINARY RESULTS: TSVD for time series in source volume and truncation criteria

6. FUTURE WORK

- Study the uncertainty of the volume time series.
- Investigate the likely cause of volume time series signals using viscoelastic approximation with different melt supplies through a dynamic model.